

WPI / Thomson

AN - 2003-803758 [75]  
AP - WO2003JP01792 20030219; EP20030705328 20030219; JP20030569693 20030219;  
[PCT Application] WO2003JP01792 20030219; US20050504141 20050620;  
[Based on WO03070786 A 00000000]  
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DW - 200375; 200859  
IC - C08F8/46; C08F255/10; C09J123/26; C09J151/06  
IN - ABURATANI R; KANAMARU M; MINAMI Y; TATSUMI T  
LNKA- 2003-221769  
MC - A04-G04 A10-E01 A12-A05B2 G03-B02D3  
PA - (IDEK ) IDEMITSU KOSAN CO LTD  
- (IDEM ) IDEMITSU PETROCHEM CO LTD  
PN - WO03070786 A1 20030828 DW200375  
EP1477498 A1 20041117 DW200475  
JP2003569693T T 20050609 DW200538  
US2005245710 A1 20051103 DW200573  
US7420023 B2 20080902 DW200859  
PR - JP20020043543 20020220  
XIC - C08F-008/46; C08F-010/00; C08F-010/08; C08F-255/00; C08F-255/10;  
C08F-257/00; C08F-257/02; C08F-008/00; C08L-023/00; C08L-023/20;  
C08L-051/00; C08L-051/06; C09J-123/00; C09J-123/20; C09J-123/26;  
C09J-151/00; C09J-151/06  
AB - NOVELTY :  
Manufacture of a modified butene-1 polymer comprises modifying a  
butene-1 polymer with a radical initiator and an organic acid. The  
butene-1 polymer is a crystalline resin which has (a) a melting point  
(T<sub>m</sub>-D) of 0-100[deg]C; (b) a specified stereoregularity; and (c) a  
weight average molecular weight (M<sub>w</sub>) of 10000-1000000 and M<sub>w</sub>/M<sub>n</sub> of <= 4.0.  
- DETAILED DESCRIPTION :  
Manufacture of a modified butene-1 polymer comprises modifying a  
butene-1 polymer with a radical initiator and an organic acid. The  
butene-1 polymer is a crystalline resin which has (a) a melting point  
(T<sub>m</sub>-D) of 0-100[deg]C; (b) a stereoregularity shown by  
(~~mmmm~~)/((~~mmrr~~)+(~~rmmr~~)) optionally substituted at most 20; and (c) a  
weight average molecular weight (M<sub>w</sub>) of 10000-1000000 and M<sub>w</sub>/M<sub>n</sub> of at  
most 4.0.  
The melting point (T<sub>m</sub>-D) is defined as the peak top of a peak observed  
at the maximum temperature side in a melting endothermic curve  
obtained by heating at 10[deg]C/minutes after retaining a sample at  
-10[deg]C for 5 minutes in a nitrogen atmosphere.  
INDEPENDENT CLAIMS are also included for:  
(1) a modified butene-1 polymer; and  
(2) adhesive composition containing a modified butene-1 polymer.  
- USE :  
Used in adhesive compositions for adhering e.g. metal and paper. It is  
especially used as a hot-melt adhesive.  
- ADVANTAGE :

The modified butene-1 polymer can impart high adhesion, high strength, flexibility etc., to polyolefins etc. It gives a highly adhesive sealant or a polyolefin having improved compatibility with inorganic fillers etc.

- POLYMERS :

Preferred Method: The [mmmm] in the butene-1 polymer satisfies  $20 \leq [\text{mmmm}] \leq 90$  and  $[\text{mmmm}] \leq 90 - 2 \times [\text{rr}]$ . The butene-1 polymer is a butene-1 homopolymer or a copolymer of butene-1 and another 3-20C alpha -olefin which contains  $\geq 90$  mol% butene-1. The II-type crystallinity (CII) obtained by melting the polymer at 190[deg]C for 5 minutes, solidifying with ice water and analysing by X-ray diffraction after leaving at room temperature for 1 hour, is  $\leq 50\%$ . The modification reaction is performed in an organic solvent or in a melted state. The radical initiator is an organic peroxide and the organic acid is maleic acid anhydride or an acrylate. The modification reaction is performed in the co-presence of a styrene compound.

- EXAMPLE :

The butene-1 polymer is produced using (1,2'-dimethylsilylene)(2,1'-dimethylsilylene)-bis(3-trimethylsilylmethyl-indenyl) zirconium dichloride as a metallocene catalyst together with tri-isobutyl aluminum and methyl-aluminoxane. The butene-1 polymer (5.0g) and p-xylene (200ml) are introduced to a flask, and stirred for 30 minutes at 80[deg]C. An organic peroxide alpha ,alpha -bis(t-butylperoxy) di-isopropyl benzene (0.01g) and maleic acid anhydride (0.1g) are introduced and stirred at 140[deg]C for 60 minutes. After cooling to room temperature, it is introduced into methanol and the precipitate is filtered and dried to give the modified butene-1 polymer.

DN - JP US

ICAI- C08F10/08; C08F255/00; C08F255/10; C08F257/02; C08F8/00; C08F8/46;  
C08L51/00; C08L51/06; C09J123/20; C09J151/00; C09J151/06

ICAN- C08L23/20

ICCI- C08F10/00; C08F255/00; C08F257/00; C08F8/00; C08L51/00; C09J123/00;  
C09J151/00

ICCN- C08L23/00

INW - ABURATANI R; KANAMARU M; MINAMI Y; TATSUMI T

IW - MANUFACTURE MODIFIED BUTYLENE POLYMER SPECIFIED MELT POINT  
STEREOREGULAR MOLECULAR WEIGHT ORGANIC PEROXIDE RADICAL INITIATE ACID  
ADHESIVE

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STEREOREGULAR MOLECULAR WEIGHT ORGANIC PEROXIDE RADICAL INITIATE ACID  
ADHESIVE

NC - 26

NPN - 5

OPD - 2002-02-20

PAW - (IDEK ) IDEMITSU KOSAN CO LTD  
- (IDEM ) IDEMITSU PETROCHEM CO LTD

PD - 2003-08-28

TI - Manufacture of modified butene-1 polymer by modifying butene-1 polymer  
of specified melting point, stereoregularity and molecular weight,  
with organic peroxide radical initiator and organic acid, used in  
adhesives

A01 - [001] 018; R00805 G0055 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58

D84 11179; H0000; S9999 S1387; S9999 S1627 S1605; M9999 M2813; M9999 M2835; M9999 M2368; M9999 M2299; M9999 M2062; L9999 L2391; L9999 L2062; L9999 L2299; L9999 L2368; L9999 L2813; L9999 L2835; K9449; P1150

- [002] 018; R00805 G0055 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D84 11179; G0033 G0022 D01 D02 D51 D53 D58 D83 D84 D85 D86 D87 D88 D89 D90 D91 D92 D93 D94; H0011; S9999 S1387; S9999 S1627 S1605; M9999 M2813; M9999 M2835; M9999 M2368; M9999 M2299; M9999 M2062; L9999 L2391; L9999 L2062; L9999 L2299; L9999 L2368; L9999 L2813; L9999 L2835; K9449; P1150

- [003] 018; ND03; ND07; B9999 B5094 B4977 B4740; B9999 B4944 B4922 B4740; K9676; K9574 K9483; K9552 K9483; K9563 K9483; Q9999 Q6666 Q6644; K9449; B9999 B5301 B5298 B5276; B9999 B4091 B3838 B3747; B9999 B4035 B3930 B3838 B3747; B9999 B4795 B4773 B4740; B9999 B5607 B5572; N9999 N5721; Q9999 Q9007; B9999 B3418 B3372; N9999 N6848 N6655; N9999 N6780 N6655

- [004] 018; D01 F48; C999 C088 C000; C999 C271

- [005] 018; D01 D11 D10 D19 D18 D31 D76 D50 D94 F48; C999 C088 C000; C999 C271

- [006] 018; D01 D11 D10 D21 D18 D34 D77 D54 D51 D57 D59 D62 D61 D68 D70 D95 F86 C1 7A Zr 4B Tr; C999 C033 C000; C999 C293

- [007] 018; R00728 D01 D11 D10 D50 D68 D92 A1 3A 215; C999 C124 C113; C999 C293

- [008] 018; D00; A999 A237

- [009] 018; D01 G3430 D02 D11 D10 D19 D18 D31 D50 D76 D88; A999 A475

A02 - [001] 018; G0033 G0022 D01 D02 D51 D53; H0000; H0011; P1150

- [002] 018; K9676; K9574 K9483; B9999 B5301 B5298 B5276; N9999 N5721

A03 - [001] 018; C999 C124 C113; C999 C293; P1923 P1912 D01 D10 D11 D50 D68 D81 A1 3A O- 6A

- [002] 018; Q9999 Q6917